



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Reissue Appl. No. : 10/669,121  
Applicant : M. J. Roberts et al  
Filed : September 23, 2003  
For : Hybrid Cycle for the Production of Liquefied Natural Gas  
  
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### SUPPLEMENTAL DECLARATION BY INVENTORS

Mark Julian Roberts and Rakesh Agrawal declare that:

1. They are the original and first inventors of U.S. Patent 6,308,531 issued on October 30, 2001.
2. They are the original and first inventors of the above-named Reissue Application No. 10/669,121 filed on September 23, 2003. They have reviewed and understand the contents of the specification and claims of this reissue application and the Preliminary Amendment filed with the application. This Preliminary Amendment corrected the following errors in U.S. Patent 6,308, 531 issued on October 30, 2001:
  - (a) errors by the U. S. Patent and Trademark Office in the issued specification and claims, which errors were not corrected as of September 23, 2003 in response to the Request to Issue a Corrected Patent filed by the patentee that was received by the Office on January 7, 2002, and
  - (b) errors by the inventors in claiming less than they had a right to claim.

3. They have reviewed and understand the contents of the Certificate of Correction issued on July 20, 2004 and the Replacement Preliminary Amendment filed on December 28, 2004. This Replacement Preliminary Amendment corrected errors in U.S. Patent 6,308, 531 and the Certificate of Correction as follows:

- (a) corrected some previously unrecognized minor antecedent errors in Claims 1-8,
- (b) corrected some previously unrecognized minor errors in the Specification,
- (c) added new Claims 9-20, and
- (d) presented replacement sections entitled "Brief Summary of the Invention" and "Abstract" that are in harmony with the amended claims per MPEP 1302.01.

4. The errors in U.S. Patent 6,308, 531 and the Certificate of Correction issued on July 20, 2004 include errors in excluding certain disclosed subject matter from Claims 1-8. New Claims 9-20 were presented in the Replacement Preliminary Amendment to address these errors by claiming the subject matter not included in Claims 1-8. The subject matter absent from Claims 1-8 and contained in Claims 9-20 is described below.

(4.1) Method Claim 9 recites at lines 22-23 that at least a portion of the pressurized gaseous refrigerant in (2) of the second refrigerant system operation is entirely cooled separately from cooling of the feed gas. This cooling may be effected, for example, in heat exchanger 150 of Figs. 1, 3, 4, 5, 7, 8, and 9 and in heat exchanger (250) of Fig. 2. It is seen that at least a portion of the pressurized gaseous refrigerant (162, 510) is cooled in a heat exchanger (150, 250) that does not cool the feed gas. This feature is not included in Claims 1-8.

(4.2) Method Claims 10, 11, and 12, by virtue of their dependency from Claim 9, include the feature described in (4.1) above, and this feature is not included in Claims 1-8. Claim 10 recites the feature that all of the pressurized gaseous refrigerant is cooled separately from the cooling of the feed gas, which feature is not included in Claims 1-8. Claim 11 includes the feature that a portion of the pressurized gaseous refrigerant is cooled by indirect heat exchange with the at

least one recirculating refrigeration system of (a) (see Fig. 2 in which the portion of pressurized gaseous refrigerant 262 is cooled in heat exchangers 206 and 222). This feature of Claim 11 is not included in Claims 1-8.

(4.3) Apparatus Claim 13 recites at lines 2-6 a first refrigeration system that provides refrigeration in a first temperature range, at least a portion of which is between  $-40^{\circ}\text{C}$  and  $-100^{\circ}\text{C}$ , and a second refrigeration system that provides refrigeration in a second temperature range, at least a portion of which is below  $-100^{\circ}\text{C}$ . Neither of these temperature conditions are included in method Claims 1-8. In addition, Claim 13 recites specific apparatus features (1) through (5) of the first refrigeration system that are not included in method Claims 1-8.

(4.4) Apparatus Claim 14 recites specific apparatus features (6) through (10) of the second refrigeration system that are not included in method Claims 1-8. In addition, by virtue of its dependency from Claim 13, includes the features described therein for the first refrigeration system, and these features are not included in method Claims 1-8.

(4.5) Apparatus Claim 15, by virtue of its dependency from Claim 14, includes the features described therein for the first and second refrigeration systems, and these features are not included in method Claims 1-8. In addition, Claim 15 includes the feature that at least one of the heat exchange means in the first and second refrigeration systems comprises a wound coil heat exchanger. This feature is not included in method Claims 1-8.

(4.6) Apparatus Claim 16 recites specific apparatus features (1) through (5) of the second refrigeration system that are not included in method Claims 1-8. These features are not included in method Claims 1-8. Further, it is seen that method Claims 1-8 do not include a process step that may be carried out in heat exchange means (2) of Claim 16, which provides for entirely cooling at least a portion of pressurized gaseous refrigerant separately from cooling of the feed gas.

(4.7) Apparatus Claim 17, which depends from Claim 16, further includes a feature wherein the heat exchange means of (2) cools all of the pressurized gaseous refrigerant separately from cooling of the feed gas. This feature is not

included in method Claims 1-8. Further, it is seen that method Claims 1-8 do not include a process step that may be carried out in heat exchange means (2) of Claim 17 in which all of the pressurized gaseous refrigerant is cooled separately from cooling of the feed gas.

(4.8) Apparatus Claim 18 recites specific apparatus features (A) through (E) of the first refrigeration system that are not included in method Claims 1-8. In addition, by virtue of its dependency from Claim 16 via Claim 17, Claim 18 includes features (1) through (5) for the second refrigeration system, and these features are not included in method Claims 1-8.

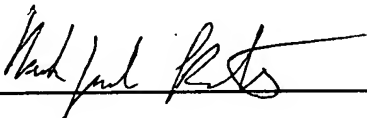
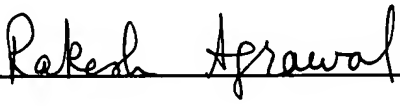
(4.9) Apparatus Claim 19 recites a feature wherein at least a portion of the cooling in the heat exchanger of (2) of the second refrigeration system is provided by indirect heat exchange by warming the cold refrigerant in the heat exchange means of (4). Method Claims 1-8 do not include this feature. In addition, by virtue of its dependency from Claim 16, Claim 19 includes features (1) through (5) for the second refrigeration system, and these features are not included in method Claims 1-8. Further, it is seen that method Claims 1-8 do not include a process step that may be carried out in heat exchange means (2) of Claim 19 in which at least a portion of the pressurized gaseous refrigerant is cooled separately from cooling of the feed gas.

(4.10) Apparatus Claim 20, by virtue of its dependency from Claim 18, includes the features (1) through (5) described in Claim 16 for the first refrigeration system and (A) through (E) described in Claim 18 for the second refrigeration system, and these features are not included in method Claims 1-8. In addition, Claim 20 includes the feature that at least one of the heat exchange means in the first and second refrigeration systems comprises a wound coil heat exchanger. This feature is not included in method Claims 1-8.

5. They acknowledge the duty to disclose to the Office all information known by them to be material to patentability as defined in 37 C.F.R. 1.56.

6. All errors corrected in the above-named reissue application including the Replacement Preliminary Amendment filed on December 28, 2004 arose without any deceptive intention by either of them.

7. All statements made herein based on personal knowledge are true and all statements made on information and belief are believed to be true; further, these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which the declaration is directed.

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